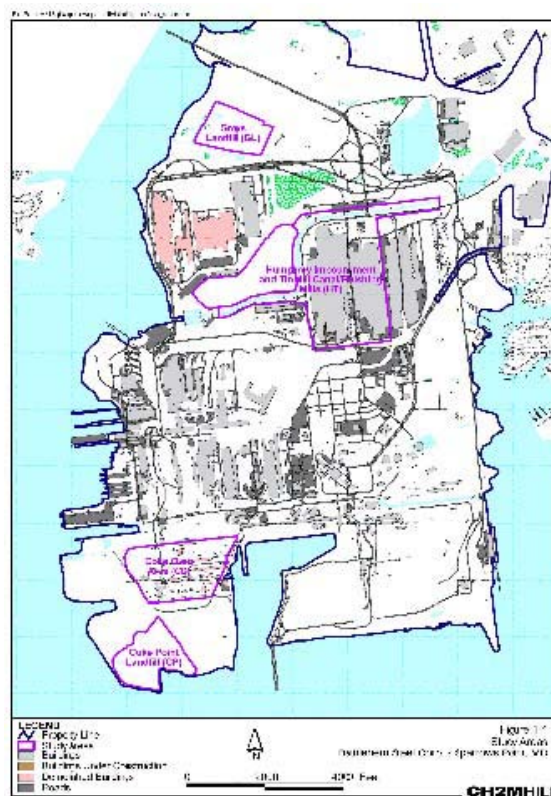


## Region 3 GPRA Baseline RCRA Corrective Action Facility

# International Steel Group (former Bethlehem Steel) - Sparrows Point

North Point Blvd  
Sparrows Point, MD 21219  
Congressional District 2  
EPA ID #: MDD053945432  
Last Updated 7/1/05



## Current Progress at the Site

### Consent Decree

On October 8, 1997, EPA, MDE, and BSC entered into a 3008(h) Consent Decree to address the following issues:

- Complete a site wide investigation to investigate releases of hazardous constituents from the facility to learn the need for potential corrective action,
- Use interim measures to address releases that require immediate action,
- Apply compliance standards for two solid waste landfills (Greys Landfill and Coke Point Landfill),
- Apply a compliance standard for visible emissions from the roof monitor at the Basic Oxygen

Furnace,

e) Minimize kish emissions,

f) Inspect and perform associated repairs of (1) all active sumps and associated trenches that are located in the Cold Sheet Mill and the Tin Mill that contain significant amounts of acid, caustic, plating, and coating solutions, and (2) all above ground storage tanks with capacity greater than 500 gallons that store hazardous substances, and

g) Minimize waste production.

Effective April 30, 2003, International Steel Group (ISG) has become the new owner of BSC which has filed for bankruptcy. EPA is in the process of issuing a Consent Decree Modification to BSC to substitute ISG for BSC for compliance with all Consent Decree requirements.

### **Site Wide Investigation**

The Consent Decree requires BSC to complete a comprehensive evaluation of the potential for both current and future risk to human health and the environment from current and past releases of hazardous wastes and hazardous constituents at the Facility.

### **Description of Current Conditions**

The Consent Decree requires that BSC begin the Site Wide Investigation with an evaluation of the onsite areas. BSC submitted a Description of Current Conditions report on the facility on January 20, 1998. The Description of Current Conditions report describes potential contaminant sources and proposes a detailed frame work for future investigations. EPA and MDE approved BSC's Description of Current Conditions report on December 9, 1998, with the contingency that subjects of continued disagreement be addressed as investigations are implemented.

### **Site Wide Investigation**

On March 8, 1999 BSC submitted Phase 1 Site Wide Investigation Work Plans to EPA which contain a site background summary, a plan for hydrogeologic investigation, a plan for ecological investigation, a community relations plan, a data management plan, and a data quality assurance plan. EPA provided comments to BSC on December 16, 1999. On February 11, 2000, BSC submitted partial response to EPA's comments deferring response to ecological comments. On March 15, 2000, at EPA's request, BSC submitted to EPA a proposal to refocus the side wide investigation on the Environmental Indicators--groundwater and human health exposure--as the priority, while deferring ecological characterization. EPA accepted the proposal. On December 12, 2000, BSC presented a schedule and the detail on how this refocus approach would be accomplished.

The Consent Decree has designated 5 special study areas that require assessment within 48 months of the effective date of the Consent Decree, excluding agency review time. The five areas are Tin Mill Canal/Finishing Mills, Greys Landfill, Coke Point Landfill, Coke Oven Areas, and Humphreys Impoundment. BSC submitted work plans of all 5 Special Study Areas to EPA in summer 2001. Initial investigation focuses on hydrogeology characterization. EPA approved all work plans and field work began shortly and was completed in fall 2001. Based on the field data collected, BSC submitted a "Site Wide Groundwater Study Report" to EPA in December 2001.

EPA received a work plan, "Site-Wide Investigation Work Plan to Evaluate the Nature and Extent of Releases to Groundwater from the Special Study Areas" in July 2002 which EPA approved in October 2002. This work plan focused on characterizing the nature and extent of contamination in the 5 special study areas. The field work has begun in December 2002 in accordance with the EPA approved work plan tasks and the well installation work was completed in 2003. Sampling from these newly installed wells was delayed in 2003 due to ownership change of the facility. International Steel Corporation (ISG) has become the new owner of the Sparrow Point facility in summer of 2003. On March 12, 2004, ISG submitted a revision to the 2002 EPA approved Work Plan "Site-Wide Investigation Work Plan to Evaluate the Nature and Extent of Releases to Groundwater from the Special Study Areas" due to change

in circumstances which EPA approved in April 13, 2004.

In accordance with EPA approved revised Work Plan, sampling of the newly installed wells was completed in 2004 and the results were presented to EPA at the meeting of September 2, 2004. As requested by EPA, IAG submitted an Environmental Indicator (EI) Human Health data collection plan to EPA in November 2004 which was approved by EPA shortly. Data collection for EI human health evaluation was completed in spring 2005 and the draft EI human health evaluation is currently under review by EPA.

### **Interim Measures**

The Consent Decree requires BSC to continue operating the ongoing remediation system at the Rod and Wire Mill Sludge Bin Remediation area and to report on the remediation activities by January 31 of each year. The remediation addresses releases of cadmium and zinc to the soil and groundwater which resulted from former operations at the former Rod and Wire Mill. When the Consent Decree was entered, the remediation system included leaching of slightly acidic water through contaminated soil and pumping and treating groundwater to remove cadmium and zinc contamination. The system did not operate in low temperatures and had been in operation since 1986. BSC submitted a report on remediation activities in January 1998, continued remediation in 1998, and submitted a report on remediation activities in January, 1999. The January 1999 report included plans to reevaluate the remedy while the remediation components were temporarily dismantled. The remediation components were temporarily dismantled to assist dismantlement of the former mill. Throughout 1999, EPA and MDE reviewed and approved BSC's re-evaluation of the twelve-year-old remedy. The re-evaluation of the remedy is described in BSC's (Annual) Report on Remediation and Monitoring Activities, Sludge Bins Storage Area Closure, Former Rod and Wire Mill submitted to the Agencies on January 28, 2000.

On July 26, 2000, BSC submitted a work plan for reestablishment of the interim measures for the Former Sludge Bin Storage Area Rod & Wire Mill. The interim measures proposed include posting warning signs regarding the contaminated area as an institutional control, installing a pump-and-treat system to recover contaminated groundwater from two recovery wells, and upgrading a groundwater monitoring network to evaluate the effectiveness of the pump-and-treat system. EPA approved the Work Plan on November 3, 2000. Installation of the system was completed in 2001 and operation has begun in summer 2001.

During 2004, the interim system has removed a total of 220 lbs of cadmium and 10,178 lbs of zinc. This compares to 357 lbs of cadmium and 15,361 lbs of zinc removed in 2003.

### **Coke Point and Greys Landfills Compliance**

The 1997 Consent Decree imposed more stringent compliance requirements for the operation of Greys and Coke Point Landfills. MDE has the sole jurisdiction to enforce the requirements.

BSC submitted the Engineering Plan and Compliance Plan for the two landfills on July 15, 1998. MDE commented the plans on May 17, 1999, and BSC submitted revised plans on October 7, 1999. BSC also submitted, at the same time, a sediment control plan approved by the Baltimore County Soil Conservation District. MDE approval of the Landfill Compliance plan for Greys landfill is pending review of the sediment control plan by the U.S. Army Corps of Engineers (ACE). ACE's review is required because the proposed sediment control system will impact wetland areas. BSC has proceeded with the regrading of the working face of the Greys landfill while awaiting approval for the construction of the sediment control system. The working face was previously graded so that rainfall would percolate through the waste material. The regrading is intended to reduce infiltration and direct rainfall to the sides of the landfill where it will be channeled into the sediment control system. The plan will also reduce the slope angle of the landfill to an acceptable value, while installing runoff channels. Greys landfill was constructed in the 1960's, and was not built with sediment controls to meet current standards. BSC is performing additional geotechnical studies at the Coke Point landfill in response to concerns expressed by MDE about the stability of underlying soils in that area. A sediment control plan will be submitted for Coke Point landfill once this geotechnical study is completed.

Groundwater monitoring has been done intermittently in the Greys landfill area since about 1982, as a result of a permit issued for the operation of a Controlled Hazardous Substances (CHS) facility in 1982.

Greys landfill, Coke Point landfill and Coke Oven are designated as "Special Study Areas" in the Consent Decree, as part of the Site Wide Investigation (SWI). This investigation will determine the extent of contamination of the soil and groundwater in and around these areas.

Steel making has occurred on this site since about 1890, and much of the land area is the result of filling of wetlands. Any current filling operations would require the approval of the ACE. Any expansion of the Greys landfill or Coke Point landfill beyond the footprint established in the Consent Decree would require a new permit.

On April 8, 1999, BSC submitted to MDE a Plan and Timetable for Future Uses and Closure of Coke Point Landfills. MDE provided preliminary comments on this plan to BSC along with its comments on the landfill compliance plan on May 7, 1999. BSC provided a written response to the comments on July 7, 1999.

### **Basic Oxygen Furnace (BOF) Visible Emissions Compliance**

The 1997 Consent Decree imposed more stringent compliance requirements of air emission from the BOF at the Roof Monitor. EPA and MDE jointly enforce the compliance.

Since October 22, 1997, BSC has been out of compliance with the BOF Roof Monitor visible emission standard on six instances: February 17, 19, and 23, 1999 and October 25, 28, and 29, 1999. BSC was assessed and has paid penalties of \$9000 for the February, 1999 violations and \$19,000 for the October, 1999 violations.

On January 21, 1998, BSC submitted a report on BOF fugitive emissions improvements. The report is under Agencies review.

1998, MDE revised the State Implementation Plan (SIP) to establish a visible emissions standard for the BOF Shop and a new test method for determining the opacity of visible emissions from the BOF Shop Roof Monitors. MDE submitted the revision to EPA for approval in October, 1999.

### **Kish Reduction Compliance**

On January 6, 1998, BSC submitted a Kish Reduction Work Plan pursuant to the Consent Decree. MDE has the jurisdiction to enforce the compliance with EPA to provide technical support.

On February 20, 1998, and on February 19, 1999, MDE submitted comments to BSC on the work plan. BSC submitted a revised plan in August 1998. From August through November, comments and responses took place through conference calls and verbal communications. MDE approved the Kish Emissions Workplan on December 1, 1999. In the Multimedia Consent Decree 1999 Annual Report, BSC reported the following status on proposed actions to reduce kish emissions: (1) Reduce Hot Metal Beaching: During 1999, 9,642 tons of hot metal was beached compared to 4,950 beached in 1998. This increase was caused by the shut down and relining of the "L" Blast Furnace. All hot metal beaching occurred in the refurbished No. 3 Mould Yard building or was pigged at Maryland Pig. (2) Refurbish No. 3 Mould Yard Building: This project was completed before the blast furnace was relined in mid-year 1999. To supplement this project, a study is underway to further contain kish emissions at the No. 3 Mould Yard with CO2 suppression systems. (3) Reduce Fugitive Emissions During Landfilling: BSC is now placing kish in a dedicated cell at Greys Landfill, where it is covered daily. Since early 1998, BSC no longer disposes of bag house kish at Coke Point Landfill. (4) Reduce Fugitive Emissions During Collection and Disposal of Kish from BOF Shop Baghouses: During 1999, BSC conducted audit inspections and followup of kish collection equipment and methods. (5) Investigate Other Methods of Slag Skimming: BSC has retained a consulting firm to conduct this

study and prepare a report by August 2000. (6) Other Tests or Studies: Pilot studies were conducted in 1999 to recycle baghouse kish with BOF slag. BSC's contractors Maryland Pig and C.J. Langenfelter developed their own plans for kish emission reduction. Maryland Pig completed their planned projects in March 1998. They continue to monitor the performance of their baghouses as described in the plan. Change and modifications to operating practices described by C. J. Langenfelter were implemented in 1998. C. J. Langenfelter continues to work with BSC to look for and implement improved operating practices to further reduce fugitive kish emissions.

At the request of the community, EPA collected samples for kish analyses between 1997 and 1998. Bulk kish samples, or source samples, were collected from the BOF and Blast Furnace bag houses, and fallout and air filter samples were collected at the community receptor area. Samples were analyzed by EPA Laboratory by electronic microscopy and X-Ray diffraction for particle size and elemental composition, high temperature combustion for carbon content, and TCLP characteristic. Particulate matter size of 10 micrometers or less is respirable, and is regulated by EPA because of its potential adverse health risk by inhalation. The results were presented in a March 1, 2000 report which determines: (a) that the source kish samples do not exceed TCLP limits to be classified as hazardous waste, (b) that the Blast Furnace kish is finer and more respirable than the BOF, (c) that the BOF kish is alkaline (pH=12.4) and more diverse in elemental composition, (d) that the Blast Furnace kish is acidic (pH=3.4 to 3.8) and less diverse in elemental composition, (e) that respirable sized kish had reached the community, but (f) that receptor air filter sample volumes were too small to be usable in quantifying the elemental composition or potential health effect on the community.

### **Waste Minimization Plan**

*Sumps, Trenches and Above Ground Tanks:* On January 18, 1999, EPA and MDE approved a workplan from BSC to identify and inspect all active sumps and associated trenches located in the Cold Sheet Mill and the Tin Mill that contain significant amounts of acid, caustic, plating, and coating solutions as well as all above ground storage tanks with capacity greater than 500 gallons that store hazardous substances. The inventory of units that require inspection was completed in June 1999. Planning work is underway to develop inspection protocol for each unit and to select suitable vendors to perform the inspection. Final inspection is targeted for June 2001.

*Tin Mill Canal Discharge Report:* In July 1998, BSC submitted a report describing discharges to the Tin Mill Canal. No further action is required.

*Strong Caustic Solution Reuse Workplan:* On December 19, 1997, BSC submitted a workplan that describes a beneficially reuse of spent caustic solution from the Humphreys Creek Wastewater Treatment Plant and a controlled discharge of spent pickle liquor and pickling rinsewater to the Tin Mill Canal. BSC has been implementing the Workplan tasks since 1998. EPA and MDE had several discussions with BSC in 1999 regarding the sampling methodology to verify that the spent caustic solution was actually reused, rather than blending in with the process as a means to dispose of hazardous waste.

*Waste Minimization Activity Cost Projection:* On April 8, 1998, BSC submitted a waste minimization activity cost projection. This cost projection will be used to ascertain the potential economic infeasibility of any of the three following waste minimization activities (which are more fully described in the Consent Decree): recycling slurry from the treatment of gas from the blast furnace, recycling oxide fume sludge from the treatment of the exhaust gas from the Basic Oxygen Furnace, and recycling the sludge generated from the treatment of wastewaters at Humphreys Creek Wastewater Treatment Plant.

*Blast Furnace Gas Cleaning Slurry Recycle Work Plan:* On October 8, 1998, BSC submitted a schedule for implementing plans to recycle slurry from the treatment of gas from the blast furnace by February 20, 2003. This recycling activity is expected to reduce the disposal of dewatered filter press cake from the slurry at Greys Landfill from 100 tons a day to less than 30

tons a day. Testing and evaluation of three recycling technologies (Hydrocycloning Scrubber Slurry, BOF Slag Conditioning, and Cement Blending) is underway.

*Recycling of BOF Fume Sludge Work Plan:* On April 8, 1999, BSC submitted a plan to recycle up to 80% of the fume sludge from the basic oxygen furnace back into the steel making process. Testing and evaluation of two technologies (Cement Blending, and Substitute Coolant at BOF) are underway.

*Humphreys Creek Wastewater Treatment Plant Sludge Work Plan:* On October 8, 1999, BSC submitted a plan to recycle sludge from the wastewater treatment plant. Testing and evaluation of several technologies are underway: Injection in the Sinter Plant, Microbial De-Oiling, Use in Sub-Base for Roadway Construction, Recycling at the BOF, Cement Blending and Microwave De-Oiling.

*Dredging of the Tin Mill Canal Work Plan:* On October 8, 1998, BSC submitted a work plan that describes the handling of the material generated during maintenance dredging of the Tin Mill Canal. The Work Plan provide for dredging of approximately 500 to 1000 cubic yards of material per event. Dredging is proposed only when wastewater flow from Sewers 34 and 36 becomes restricted into Tin Mill Canal, which occurs about every 18 to 24 months. Consistent with the Consent Decree, the plan requires BSC to notify MDE before dredging.

*Facility Wide Waste Minimization Plan:* On April 7, 1999, BSC submitted a facility-wide waste minimization workplan that identified a number of projects to reduce the volume, mobility and toxicity of solid wastes, hazardous wastes and hazardous constituents generated at the facility. EPA and MDE Waste Minimization Teams visited the facility on June 2, 1999 and September 13, 2000 to review the project progress. BSC is undertaking the following projects at various stages, as described in the 1999 Multimedia Consent Decree Annual Report:

1. Blending Kish with BOF Oxide Fume Sludge - Concept evaluation stage
2. Recycle Chromic Acid, #8 Tin-Free Steel Line - Pilot testing planning stage
3. Replace the Lubrication System at the Continuous Caster - Implemented
4. Install a caustic washer in the #3 Galvalume Line - Implemented
5. Replace Slipper Couplings at the Hot Strip Roughing Mill - Implemented
6. Install Slag Splashing at the Basic Oxygen Furnaces - Implemented
7. Replace Dip Tanks With a Spray System at the Coating Lines Passivation System - Implemented
8. Replace the Electrolyte in the Tin Plating Lines - Implementation stage
9. Install a New Cold Mill - Implementation stage
10. Sale or Exchange of Kish - No progress
11. Pickle Liquor Sales - Evaluation stage
12. Steelmaking Slag Reuse as Aggregate Additive - no progress
13. Replace lubrication system at the 48" Tandem Mill - Planning stage

### **Civil Penalties and Pollution Prevention Credits**

In reaching the Consent Decree agreement, MDE sought a civil penalty from BSC for previous violations of the BOF visible emission standard. As required pursuant to the Consent Decree, BSC (a) paid a penalty of \$350,000 to MDE within 30 days of the effective date of the Consent Decree, and (b) agreed to implement specified pollution prevention and waste minimization activities in lieu of additional penalties ("the pollution prevention credit"). BSC may be required to pay additional penalties if certain waste minimization activities are not completed.

1. EPA and MDE will continue to oversee the site-wide investigation with focus on the Environmental Index
2. EPA and MDE will oversee the implementation of an Interim Measures Work Plan to restart a pump-and-treat system at the Former Sludge Bin Storage Area to reduce cadmium and zinc contamination in groundwater from previous operation.
3. MDE and EPA will continue to oversee the progress of the waste minimization projects and to identify opportunities for further waste minimization.

4. MDE, with EPA's technical support, will continue to enforce compliance requirements for the Greys and Coke Point Landfills operation, the BOF emission compliance, and the kish reduction plan implementation.

## Site Description

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The Bethlehem Steel - Sparrows Point facility is located on approximately 2300 acres of a peninsula on the north side of the Patapsco River approximately nine (9) miles southeast of downtown Baltimore.

Maryland Steel built the first furnace at Sparrows Point in 1887. The first iron was cast in 1889. Bethlehem Steel purchased the facility in 1916 and enlarged it by building finishing mills. During peak production in 1959, the facility operated 12 coke-oven batteries, 10 blast furnaces, and four open-hearth furnaces. The coke ovens ceased operations in December 1991 and the coke batteries have been or are being torn down. BSC currently operates a sintering plant, a blast furnace (for iron production), two basic oxygen furnaces (for steel production), a continuous strip castor (two lines), hot strip mills, cold reduction mills, and tin mills. Waste management at the property includes air pollution controls throughout the manufacturing processes, two solid waste landfills, and waste water treatment. A shipyard on contiguous property owned by BSC when the Consent Decree was entered, a former town on Bethlehem Steel's property, and management of waste iron, oil, and slag by other companies on Bethlehem Steel's property are included in the site wide investigation. Through a RCRA Facility Assessment and review of the Description of Current Conditions Report, EPA and the Maryland Department of the Environment have determined that further investigation and/or action is needed at 81 solid waste management units and 28 areas of concern.

## Site Responsibility

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RCRA Corrective Action activities at this facility are being conducted under a Consent Decree among EPA, MDE and BSC. BSC filed for Chapter 11 reorganization in late 2001 but informed EPA that BSC intends to comply with the Consent Decree requirements. In 2003, the court has approved BSC's bankruptcy proceeding and International Steel Group (ISG) has become the new owner of the Sparrow Point Facility and has informed EPA that it will comply with BSC's Consent Decree.

## Contaminants

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The main contaminants associated with this site have not yet been fully defined. Past assessments have identified the following potential contaminants: antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, tin, zinc, ammonia, benzene, cyanide, ethyl benzene, ethylene glycol, hydrogen cyanide, hydrogen sulfide, naphthalene, PAHs, PCBs, pentachlorophenol, phenols, pyrene, sodium phenolate, styrene, sulfuric acid, toluene, trichloroethylene, xylene, coal tar, oils, lime sludge, waste alkaline rinses, mill scale, and ship yard wastes.

## Community Interaction

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Land use in the vicinity is mixed with industrial, commercial, residential, and recreational areas. The residential community Edgemere is contiguous to a portion of the facility and occupies over

10 square miles with approximately 3100 persons per square mile. The residential community Dundalk is located across Bear Creek from Sparrows Point and occupies over 13 square miles with approximately 4900 persons per square mile.

EPA and MDE has held two public meetings to inform the community about the Consent Decree and its progress (February 25, 1997, and October 30, 1997) and one meeting with leaders of community groups (March 27, 1997). In addition, in 1996, Bethlehem Steel initiated a Community Commitment Initiative which meets regularly with elected officials and leaders of civic, business, environmental, and other organizations representing communities and neighborhoods in the vicinity. Many issues including dissemination of progress on the Consent Decree are addressed by this group. BSC met with the Community Commitment Initiative Leadership Group two times during 1999 (June 9, 1999, and December 1, 1999). In addition, on October 10, 1999, BSC attended the North Point Peninsula Community Coordinating Council meeting to discuss "fallout" incidents and presented plans to mitigate and minimize future incidents.

BSC has provided a \$50,000 grant for the CCI leadership group to hire an independent advisor to review and explain technical documents prepared under the Consent Decree. This grant is independent of the Consent Decree. BSC met with Community technical advisor once during 1999 (June 1, 1999).

## **Institutional Controls**

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No institutional controls are currently in place.

## **Government Contacts**

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EPA Project Manager  
Mr. Andrew Fan - 3WC23  
U.S. Environmental Protection Agency - Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029  
Phone: (215) 814-3426  
Email: fan.andrew@epa.gov

Mr. Richard Johnson  
Maryland Department of the Environment  
1800 Washington Blvd.  
Baltimore, MD 21230  
Phone: (410) 537-3400

For more information about EPA's corrective action webpage, including Environmental Indicators, please visit our site at: [www.epa.gov/reg3wcmd/correctiveaction.htm](http://www.epa.gov/reg3wcmd/correctiveaction.htm)